



THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-2947-050, 071L

Course Name: Data Structures and Algorithms

1 Instructor Information

Instructor:	Jeanette Bautista		
E-mail:	je.bautista@uwinnipeg.ca		
Website:	http://faculty.acs.uwinnipeg.ca/jbautista/		
Office Hours:	Thursdays 17:00 – 18:00	Office:	3C08
Class Meeting Time:	Thursdays 18:00 – 21:00	Room No:	3D04
Lab Time:	Thursdays 16:00 – 15:15	Room No:	3D03

2 Important Dates

1. First class: Thursday, September 7, 2017
2. First lab: Thursday, September 14, 2017
3. Midterm exam: Thursday, October 19, 2017
4. Reading week: October 8-13, 2017 (no classes)
5. Last class: Thursday, November 30, 2017
6. Final exam: Thursday, December 14, 2017
7. Final withdrawal date (without academic penalty): Friday, November 10, 2017.

A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before this date.

3 Course Objectives/Learning Outcomes

This course provides an introduction to the theory, practice and methods of data structures and algorithm design. Students will learn elementary data structures such as stacks, queues, linked lists, sequences, trees and graphs in Java language, and the algorithms designed for manipulating these data structures.

The objective of this course is to introduce students to both data structures and algorithm design. The goal of the lecture is twofold: 1) to discuss different data structures to represent real world problems and, 2) to study various ways to design algorithms to solve the problems. As an important part of the course, the Java programs that implement all the algorithms discussed will be analyzed and compared to develop deep knowledge on programming.

4 Evaluation Criteria

1. Labs (5%)
 - 8-10 weekly labs
 - No late lab submissions accepted

2. Assignments (20%)
 - 4 assignments
 - Assignments will be accepted up to 1 day late with a 25% penalty
3. Midterm Exam (25%)
 - The midterm exam will be during the first half of the scheduled class on October 19
 - Regular class will recommence in the second half
 - see #4 below
4. Final Exam (50%)
 - Should illness prevent participation in a test or examination, a medical certificate from a certified physician must be supplied before any adjustments are considered.

Students should contact the instructor as soon as possible if extenuating circumstances require missing an assignment, test or examination.

5 Final Letter Grade Assignment

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90 – 100%	B+	75 – 79%	C	60 – 64%
A	85 – 90 %	B	70 – 74%	D	50 – 59%
A-	80 – 84%	C+	65 – 69%	F	below 50%

6 Exam Requirements

- Photo ID is required for the final exam.
- The use of computers, calculators, phones, or other electronic devices is not permitted on exams.
- Midterm and final exams are closed book.

7 Services for Students

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., notetakers) are encouraged to contact Accessibility Services (AS) at 786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential <http://www.uwinnipeg.ca/accessibility>.

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2017-18 Undergraduate Academic Calendar.

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at www.uwinnipeg.ca/respect .

8 Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt with in accordance with the University's policies. Be sure that you have read and understood Regulations & Policies #8, in the 2017-2018 UW Undergraduate Academic Calendar available at <http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>.

Additional information is available at University of Winnipeg library video tutorial "Avoiding Plagiarism" <https://www.youtube.com/watch?v=UvFdxRU9a8g>

9 Required Text Book / Reading List

- M. T. Goodrich and R. Tamassia: Data Structures and Algorithm in Java (6th Edition), John Wiley & Sons, Inc., (ISBN 1118771338).
- Class Notes will be available at <http://courses.acs.uwinnipeg.ca/2947-050/>

10 Prerequisite Information

- A grade of at least C in ACS-1904/3 or ACS-1905/3
- Co-Requisite: MATH-1401/3

11 List of Topics to be covered (tentative)

Java basics / review	Iterators
Object-oriented design	Trees
Arrays	Binary trees
Linked lists	Priority queues
Big O notation	Heaps
Recursion	Maps
Stacks	Hash tables
Queues	Search trees
Dequeues	Sorting
Array lists	Selection
Positional lists	Graphs

12 Additional Course Related Information

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform you via uwinnipeg email, as well as the departmental assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.
2. Your uwinnipeg email address will normally be used for course related correspondence.
3. Please note that withdrawing before the VW date does not result in a fee refund.
4. Class make-up days are scheduled at the end of term for courses that conflict with holidays.